FAX_INFO:1238376:341-PP-9000:

FIRST QUANTUM MINERALS LTD.

Cobre Panamá

Maintenance Work Order / Orden de Trabajo de Mantenimiento			
Work Order No. / No. Orden Trabajo	1238376 WM		Original Copy
Start Date / Fecha Inicio	24/10/23	**Priority / Prioridad**	3
Counter Reading / Lectura Medidor		**WO Type / Tipo Orden**	PM Orders
Category Code / Código Categoría	-. 068-Pump -. Maintenance Equipment OP / Island OP	**Status / Estado**	WO Scheduled
		Supervisor	Proc Moly Circuit Supvsr

Asset General Information. / Información General Activo	
Asset No. / No. Activo	341-PP-9000
Manufacturer / Fabricante	Manufacturer
Model Desc. / Desc. Modelo	Pumps Cu Concentrate Thickener Cu Conc Thickener Area
P&ID	P&ID
Parent / Padre	341 Copper Concentrate Thickening
Warranty / Garantia	NO

Description of problem in Work Request. / Descripción del Problema	
1.	1W Inspect Concentrate Area

Work Order Parts / Lista de Partes

JDE Number / Número JDE	Spare Description / Descripción de la Parte	Op No./No.O2	Qty / Cant.	Unit / Unidad

Equipment and Instructions / Equipo e Instrucciones

	1W Inspect Concentrate Area
	1W Inspect Concentrate Area

Tooling / Herramientas

JDE Number / Número JDE	Spare Description / Descripción de la Parte	Qty / Cant.	Unit / Unidad

Labor Allocated / Descripción Mano Obra

Crew Size / No. Personas	Work Center / Centro de Trabajo	OPS / Sec. Op	Est. Hours / Horas Est.
2	LINT Industrial Technician	10.00	16.00

Timesheet / Hoja de Tiempo

Employee JDE Code / Código JDE Empleado	Name / Nombre	Initial / Iniciales	OPS / Sec. Op	Act. Hours /H. Actual
63824	Yussef Alafif	24/10/23	10.00	7.00
[illegible]	Eduardo Arosta	24/10/23	10.00	3.00

Supervisor Name / Nombre Supervisor: Jose E. Rodriguez G.

Engineering – Regrind & Geho Supervisor

Mobile: (+507) 6609-5307

Supervisor Signature / Firma Supervisor:

Printed / Impreso: 20/10/23

Complete values / Completa estos valores:	
Actual Start Date of Job / Fecha Real de Inicio de Trabajo	24/10/23
Actual Start Time of Job / Hora Real de Inicio de Trabajo	8:00 pm
Actual Finish Date of Job / Fecha Real de Termino de Trabajo	25/10/23
Actual Finish Time of Job / Hora Real de Termino de Trabajo	3:00am

Failure / Falla	En busca de falla
Analysis / Análisis	
Solution / Solución	Inspección del área

Comments / Comentarios

- Se realiza el análisis de riesgo
- Se realiza inspección de equipos y estructuras
- 341-PP-9012 → Pernos de base de la bomba altamente corroidos
- Se retiva manyeron y se lleva a 333.
- 341-ZM-9016 → Cañon no tiene boquilla.
- Detalles en el sheet feed
- Se llena la PM

WO Raised by: / Orden Creada por:	**MINERA PANAMA S.A.**
WO Raised Date: / Fecha Creacion Orden:	**11/10/2023**
Work Completed by: / Trabajo Completado por:	Vossef Rafi
Supervisor Review: / Revision del Supervisor:	
Date Completed / Fecha completada:	25/10/23

Supervisor Name / Nombre Supervisor:

Supervisor Signature / Firma Supervisor:

TASK / TAREA	1W Mechanical Concentrate area ins.	7D341M000_01

PURPOSE / PROPOSITO:	*To Safely carry out the Mechanical requirements of the Process Plant in a systematic and orderly manner.*
SCOPE / ALCANCE:	*This work instruction is part of an approved maintenance strategy that has been developed to maintain the plant reliability is carry out to Mechanical Inspect the performance to sustain the efficiency of the plant operation.*

***PREREQUISITES* / PRE-REQUISITOS**

***People Required* / Personal Requerido**	***PPE* / EPP**	***Tools & Equipment* / Herramientas y Equipos**	***Competency* / Competencia**
02 Industrial Technician/ Técnico Industrial	*Standard PPE/*Epp estandar	*Pieces Of Rags* / Trapo Industrial	*Trained in the task to perform the procedure*
	*Gloves/*Guantes	Pyrometer	
	*Ear Plugs/*Tapones de oido		
	Follow JSEA PPE stated for each task		

***WARNING!* / PELIGRO**

Most equipment will be operating, be aware of the inherent dangers, i.e. no loose clothing, wear gloves where appropriate. Some of these checks include touching equipment to feel for vibration, if it is not safe to do so, DO NOT DO IT.

***PM CONDITION CODES* / CODIGOS CONDICION DEL PM**

1	***Poor Condition* / Condicion Pobre**	*Needs Urgent Attention* / Necesita atencion Urgente
2	***Average Condition* / Condicion Promedio**	*May Require Attention* / Podria Requerir Atencion
3	***Serviceable Condition* / Condicion operativa**	*Requires No Attention* / No Requiere atencion

***APPROVAL* CONTROLLED DETAIL.**	*DOCUMENT STATUS:*			
PREPARED BY: Jhonatan Lorenzo	*REVISION*	*0*	*ISSUE DATE:*	
APPROVED BY:	*REVIEW DATE:*			
APPROVER'S SIGNITURE:	*Document name* ***1W Mechanical Concentrate area* ins.**			

PREPARATION ACTIVITIES / ACTIVIDADES PREVIAS

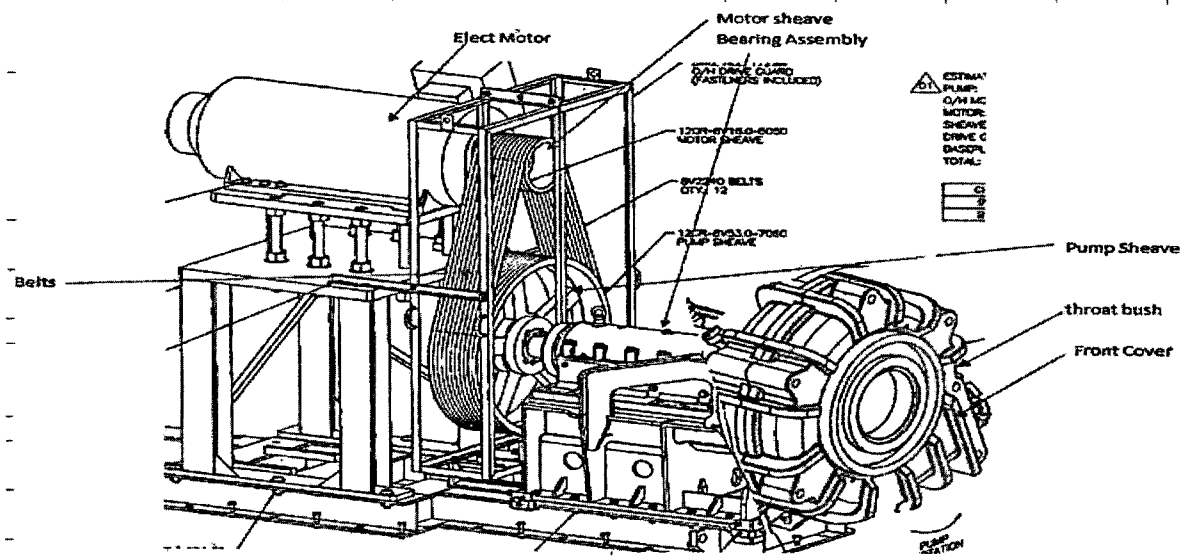
- ❑ *Team group discussion (5 minutes-on hazards).* / Charla grupal (5 minutos –riesgos y peligros)
- ❑ *Prepare the lock out and tag out* / Prepare el bloqueo y etiquetado
- ❑ Perform the field risk analysis / Realizar un análisis de riesgo de campo.
- ❑ Prepare needed tools for the task. Preparar herramientas necesarias para la tarea
- ❑ Bloquear equipo y realizar limpieza en la periferia de trabajo. Block equipment and clean the periphery of work

DETAILED INSTRUCTIONS

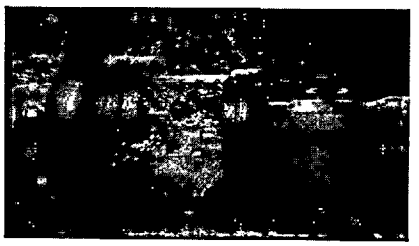
MAINTENANCE REQUIRED	341-PP-9002	341-PP-9003	341-PP-9004	341-PP-9005	341-PP-9021	341-PP-9007	341-PP-9008	341-PP-9009	341-PP-9010	341-PP-9011	341-PP-9012
1. Make a risk assessment before start the inspections.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2. General inspection of pump condition. Look for debris, strange objects, unusual noise, housekeeping condition. Determine if pump unit requires general cleaning by operation department.	3	3	Dr 1	Dr 2	3	3	3	3	D 2	D 2	2 Pump base
3. Check pump for noisy bearings, cavitation or vibration.	3	3	3	3	1	3	3	3	3	3	3
4. Measure the bearing assembly temperate, both bearings. NE NDE (See chart below)	3	3	3	3	1	3	3	3	3	3	3
5. Determine if water leakage at packing and glands is normal. Tightness to control leakage if necessary.	2	3	3	3	1	3	3	3	3	3	3
6. Check Pump for leaks.	3	3	3	3	1	3	3	3	3	3	3
7. Check for any strange noise coming from the drive belts.	2	2	2	2	1	3	3	3	3	3	3
8. Check for grease leaks.	3	3	3	3	1	3	3	3	3	3	3
9. If the gland adjustment is close to its final stage, report to the supervisor	3	3	3	3	3	3	3	3	3	3	3
10. Inspect safety guards for proper installation/condition. **Do not work in the safety guards unless the equipment is lock out and tag out.**	3	3	3	3	3	3	2	3	2	3	2
11- Verify Bering housing oil level	1	1	1	1	1	1	1	1	1	1	1
12- Inspect visually the pump host for dent in the rail, excessive corrosion, deformation nor excessive dirt clean it if is necessary. **341-CN-9002 & 341-CN-9003**	3	3	x	x	x	x	x	x	x	x	x

Bearing assy Temperature Record	341-PP-9002	341-PP-9003	341-PP-9004	341-PP-9005	341-PP-9021	341-PP-9007	341-PP-9008	341-PP-9009	341-PP-9010	341-PP-9011	341-PP-9012
NDE tempeture C	29	83	42	50	1	27	24	28	27	24	24
DE Tempeture C	30	90	47	58	1	27	24	28	27	24	24

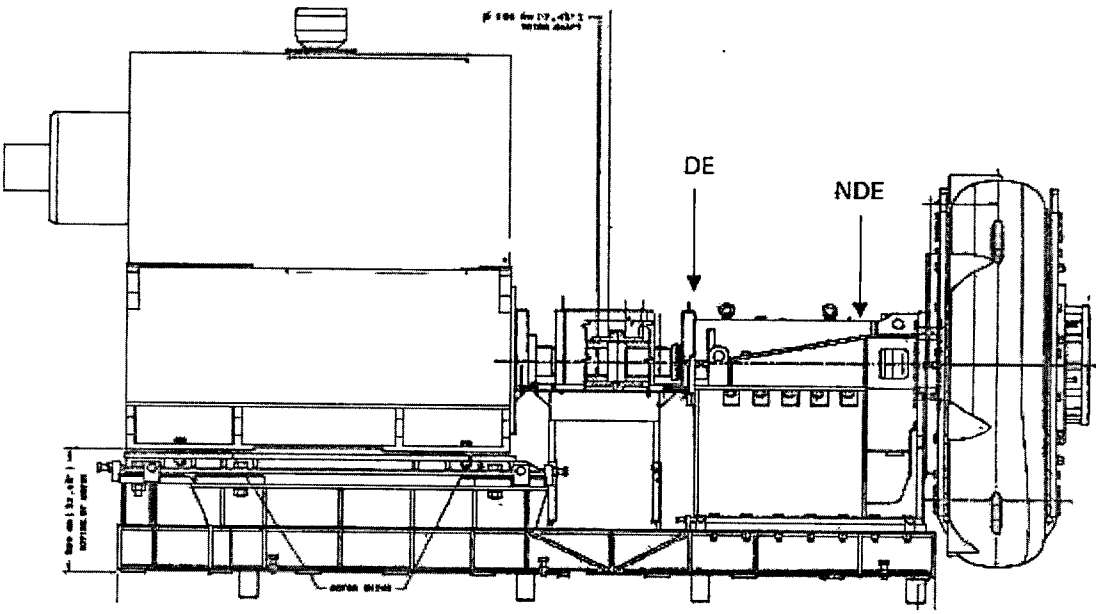
Note: if the task doesn't apply for the equipment fill the grill with "N/A"

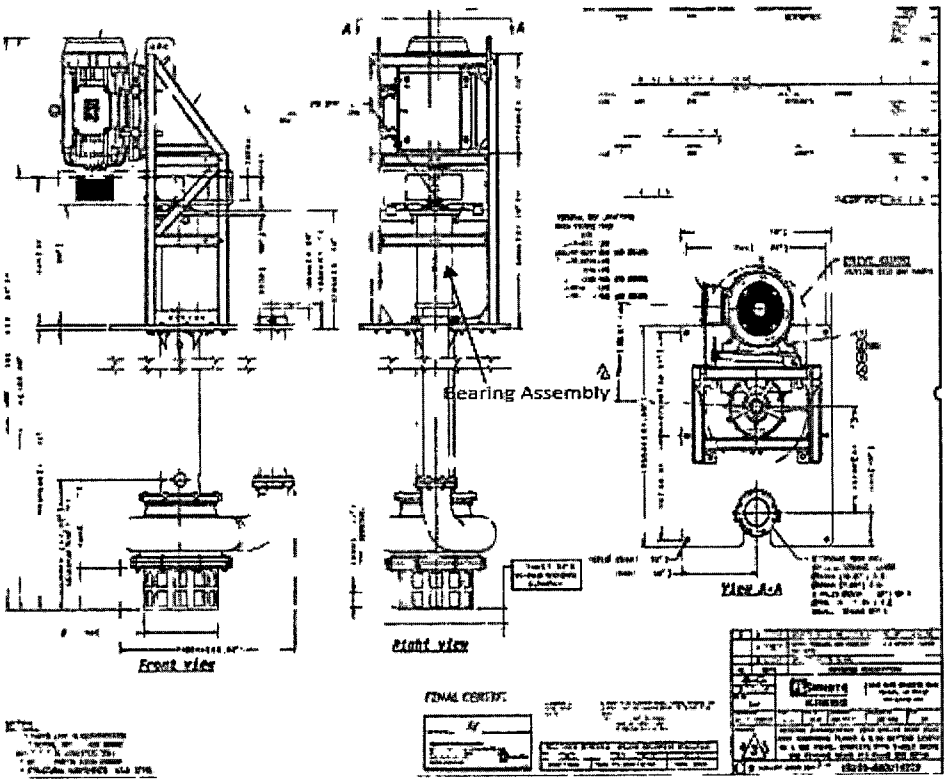


Horizontal Pump Configuration



Excessive Gland water leakage

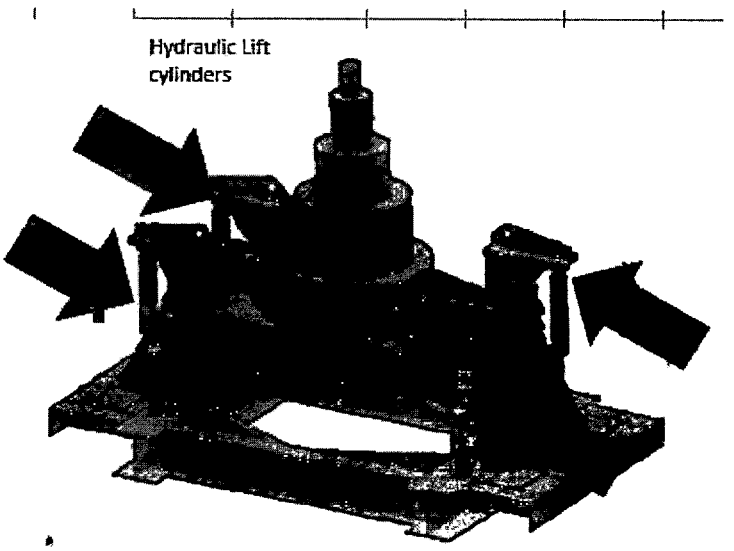


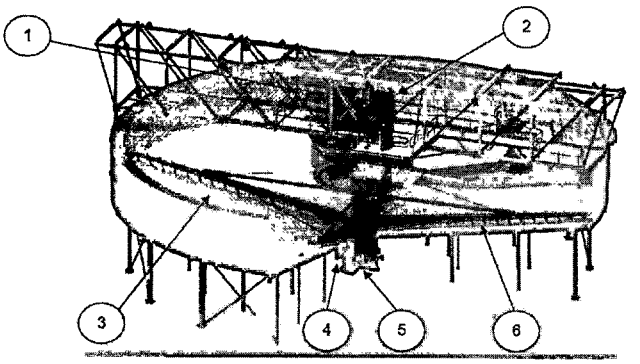


Sump Pump Configuration.

	MAINTENANCE REQUIRED	341-TH-9001
	Tank	
13	Inspect tank for leaks, rust or damage.	3
14	Check walkways, ladders and stairs for signs of rust or damage.	3
15	Inspect visually the pump host for dent in the rail, excessive corrosion, deformation nor excessive dirt clean it if is necessary. **341-CN-9001**	2
	Powerpack	
16	Check the oil level in hydraulic tank using the sight glass on the side of the hydraulic tank. The fluid level should be showing 2/3rds on sight glass.	3
17	Verify the return line filter indicator – If high pressure detected rise a WO request to change the element.	3
18	Check the indicator on filters and rise a WO request to change elements if required.	3
19	Verify oil breathers is free from dirt build-up.	3
20	Visually inspect reservoir covers, solenoids and hose connections for oil leaks.	3
	Thickener Drive	

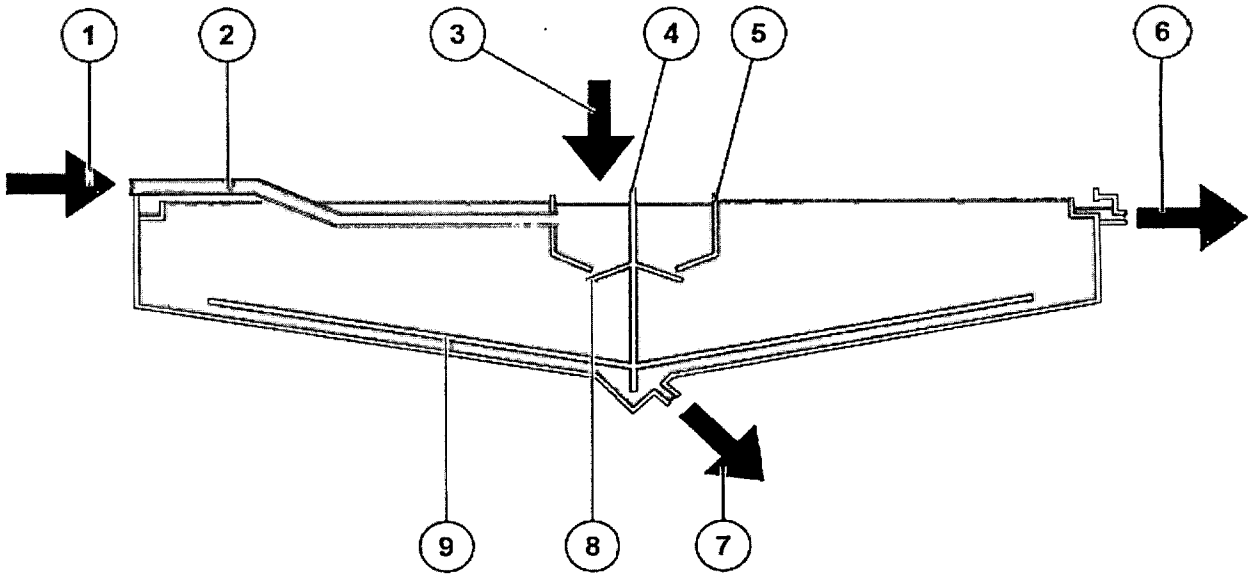
21	Verify the oil level in the gearbox sight glass.	3
22	Visually inspect the gearbox for any oil leaks.	3
23	Check for any undue noise or vibration.	3
24	Ensure all safety guards are fitted correctly.	3
	Rake Lift	
25	Ensure there are no foreign objects hindering the rake lift operation.	3
26	Check the rake lift cylinders for leaks on the seals and connections.	3
	Control Panel & Instruments	
27	Press "Lamp Test" on panel to check indicator lights.	3
28	Verify operation of all instruments.	3





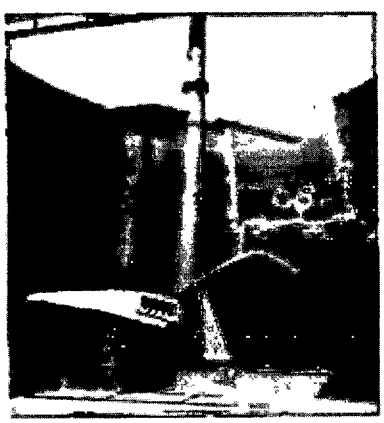
1. *HPU servicing*
2. *Gearbox removal*
3. *Tank floor surface treatment*
4. *Tank access through manhole*
5. *Steady pin adjustment*
6. *Rake blade replacement*

pipe. Flow is regulated using pumps or valves.



1. *Feed*
2. *Feedpipe*
3. *Flocculant*
4. *Driveshaft*
5. *Feedwell*
6. *Overflow*
7. *Underflow*
8. *Deflection plate*
9. *Rake arms*

TANK AND AGITATOR MAINTENANCE REQUIRED	341-AG-9001	341-TK-9001
29.Make a risk assessment before start the inspections.	✓	✓
30. General inspection of gearbox and tank condition. Look for debris, strange objects, housekeeping condition. Determine if tank(outside) or agitator requires general cleaning by operation department.	1	3
31. Check agitator for noisy bearings or vibration	1	n/a
32. Check agitator for any lubricant leakage	1	n/a
33.Check agitator for any strange noise from motor.	1	n/a
34.Check outside tank for any dent, excessive corrosion or leakage.	n/a	3
35. If the tank is open(without cap) see inside for any external material and for agitator and tank coating .	1	1
36.Inspect safety guards for proper installation/condition.	1	n/a



MAINTENANCE REQUIRED	341-BX-9004
40- Inspect box launders and hoppers for any leak if one is found write it down at the fail sheet	3

	MAINTENANCE REQUIRED	341-SC-9001
41	Verify the oversize discharge chute condition, inspect the rubber lining for wear and the dust rubber seal for leaks.	3
42	Inspect the side panels conditions, look for signs of wear, ensure thery are not severely worn or missing and are securely attached.	3
43	Verify the undersize discharge chute condition, inspect the rubber lining for wear and the dust rubber seal for leaks.	3
44	Visually inspect the water sprinklers, ensure they are no broke or plugged.	3
45	Verify the condition of the hoses, look for leaks, damages, wear, lose or any abnormal condition.	3
46	Check the motor guards condition, look for corrosion or damages.	3
47	Visually inspect the isolators, look for noises, damages, corrosion and material build up. Ensure they are no fully compressed or broken.	3

Item	*Code /*	*Fault Description / Recommended Action / Work Order Generation*	*W/O*
ITEM	**Código**	**Descripción de la Falla / Acción Recomendada / Generación de Orden de Trabajo**	**O/T**
2	1	No tiene manivela	
2	2	Se necesita preservación	
8	2	fuga por el prense estopas	
7	2	Se necesita Verificar alineamiento y tensado	
10	2	Guardas necesitan preservación	
13	2	No tiene acrilico.	
Item	*Code*	*Repairs and Adjustments Carried Out / Completed*	*W/O*
ITEM	**Código**	**Reparación o ajuste llevado a cabo / Completado**	**OT**
5	2	Ajuste del prensaestopas	

Completed by	Yussef Hafiz
Signature	
Dated	25/10/23

Supervisor	
Signature	
Dated	

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- 341-PP-9004
  - Válvula de drenaje no tiene manivela

- 341-PP-9005
  - Válvula de drenaje necesita preservación

- 341-PP-9008
  - Guardas necesitan preservación y reemplazo

- 341-PP-9010
  - Válvula de descarga necesita preservación
  - Guardas necesitan preservación

- 341-PP-9011
  - Válvula de descarga necesita preservación

- 341-PP-9012
  - Pernos de base de la bomba presentan alta corrosión
  - Guardas necesitan preservación